

## FOREST BLOWDOWN PHENOMENA AND PREDICTIVE METHODOLOGY

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In recent years, beginning about 1983, the U.S. Army, with support from the Defense Nuclear Agency, has been investigating the effects of blast waves on trees and forests. This subject is commonly referred to as tree or forest blowdown. The present investigations are actually a continuation of a long term research interest of the nuclear weapons effects community which has antecedents dating back to the late 1940's and was actively pursued during the 1950's and 1960's. During the period 1969 through 1982 the program was relatively inactive.

The principal thrust of the recent investigations has been the development of a computer methodology for predicting the probability of tree blowdown and calculating tree debris transport and distribution. A number of large scale field tests and laboratory scale experimental projects have been carried out to support and validate this methodology. Future plans call for a continuation of this program through additional analysis and field tests culminating with a large high explosive test in an actual forest site, probably in 1992.

This paper will present an overview of the recent forest blowdown research investigations conducted by the Ballistic Research Laboratory and the Defense Nuclear Agency. It will focus principally on the recent experimental activities, the objectives and results. It will also touch on the analysis and rationale for the experimental work. In separate papers intended for this Symposium a more detailed discussion will be presented concerning the structural response of blast loaded trees and the recently developed computer methodology.